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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,533	10/16/2003	Oliver Luz	10191/3405	2134
26646	7590	12/08/2005	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			MURALIDAR, RICHARD V	
			ART UNIT	PAPER NUMBER
			2838	

DATE MAILED: 12/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/688,533

Applicant(s)

LUZ ET AL.

Examiner

Richard V. Muralidar

Art Unit

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-3 and 5-18 is/are rejected.
7) ☒ Claim(s) 4 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/16/03, 11/17/03, 2/20/04
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The information disclosure statement filed 10/16/2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103[a] which forms the basis for all obviousness rejections set forth in this Office action:

[a] A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 10 are rejected under 35 U.S.C. 103[a] as being unpatentable over Ng et al [US 6320351].
3. With respect to Claim 1, Ng discloses a vehicle electrical system powered by a battery to supply a plurality of loads [Fig. 7, battery 12A and loads 20, 22, and 24], comprising: an integrated module positioned between a positive terminal of the battery and the plurality of loads, the integrated module having an arrangement for detecting a state of charge of the battery [Fig. 7, battery voltage monitor 36, col. 4 lines 27-29] a control unit for power management of the vehicle electrical system [Fig. 7, power management unit 38, col. 4 lines 27-29], and at least one supply output for supplying power to the loads [Fig. 3, battery positive terminal 13A, or latching relay 30 is the point of attachment for loads; col. 4 lines 27-29 with vibration detection unit as load].

Ng differs from claimed invention in that battery voltage monitor 36 and power management unit 38, with one supply output are not specified in an integrated module.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the battery voltage monitor 36 and power management unit 38 [Fig. 7] with a positive output terminal into one integral module to create an arrangement for detecting a state of charge of the battery, a control unit for power management of the vehicle electrical system, and at least one supply output for supplying power to the loads; since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 [CCPA 1965]. See **MPEP 2144.04**.

4. With respect to claim 10, Ng discloses the vehicle electrical system as recited in Claim 1, further comprising a relay [Fig. 7 element 30A is a latching relay]; wherein the integrated module has a connection to a starter of the vehicle [Fig. 7 shows starter 26 connected to the battery monitor/ power management module via connections 30A, 40A and 50A], and wherein the relay is situated between the battery and the terminal of the integrated module [Ng. Fig. 7 latching relay 30A].

Ng differs from claimed invention in that battery voltage monitor 36 and power management unit 38, with one supply output are not specified in an integrated module.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the battery voltage monitor 36 and power management unit 38 [Fig. 7] with a positive output terminal into one integral module to

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create an arrangement for detecting a state of charge of the battery, a control unit for power management of the vehicle electrical system, and at least one supply output for supplying power to the loads; since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 [CCPA 1965]. See **MPEP 2144.04**.

5. Claims 2-3 are rejected under 35 U.S.C. 103[a] as being obvious over Ng et al [US 6320351] in view of Larson [US 6690140].

6. With respect to Claim 2, Ng discloses the vehicle electrical system as recited in Claim 1, and an arrangement for detecting the state of charge of the battery, as a battery voltage monitor. Ng does not specifically disclose a battery current meter.

Larson discloses the arrangement for detecting the state of charge of a battery includes a battery current meter [Abstract, lines 13-16 refers to instrumentation, and Fig. 1 gauge cluster 14]. In the context of a vehicle's electrical battery charging system, it is understood that a current meter is both a type of instrumentation and a gauge, and is a standard component of many vehicle electrical systems' instrumentation packages/ gauge clusters.

At the time of the invention it would have been obvious to one of ordinary skill in the art to add an instrument/ gauge, specifically a battery current meter, to Ng.

The suggestion/ motivation for doing so would have been to provide a visual means of determining the rate of current charging and current loss from the battery, and also to assist in electrical troubleshooting.

7. With respect to Claim 3, Ng discloses the vehicle electrical system as recited in Claim 1. Ng does not disclose a battery voltage sensor and a battery voltage meter.

Larson discloses a vehicle electrical system comprising a battery voltage sensor [Fig. 2 element 46, and col. 4 lines 59-61] located outside the integrated module, wherein the arrangement for detecting the state of charge of the battery includes a battery voltage meter [col. 4 lines 52-54 instrumentation, and Fig. 1 gauge cluster 14 includes the voltage meter] that cooperates with the battery voltage sensor. In the context of a vehicle's electrical battery charging system, it is understood that a voltage meter is both a type of instrumentation and a gauge, and is a standard component of many vehicle electrical systems' instrumentation packages/ gauge clusters.

At the time of the invention it would have been obvious to one of ordinary skill in the art to add an instrument/ gauge, specifically a battery voltage meter, to Ng.

The suggestion/ motivation for doing so would have been to provide a visual means of determining the rate of voltage rise and voltage drop across the battery caused by charging and discharging, and also to assist in electrical troubleshooting.

8. Claims 5-8 are rejected under 35 U.S.C. 103[a] as being unpatentable over Ng et al [US 6320351] in view of McRoberts [US 4965461].

9. With respect to claim 5, Ng discloses the vehicle electrical system as recited in claim 1. However, Ng does not disclose a fuse module with an input and plurality of outputs, an integrated module connected to the input of the fuse module, or fuse module outputs supplying power to the loads.

McRoberts discloses a vehicle electrical system comprising: a fuse module [Fig. 1, fuse block 64] having an input, a plurality of supply outputs, and a plurality of fuses that connect the plurality of supply outputs to the input [Fig. 1 input connection from battery, outputs through elements 66, 68, 70]; wherein a terminal of the integrated module is connected to the input of the fuse module [this is the standard practice in the automobile industry of protecting all valuable loads with a fuse or circuit breaker] and wherein the plurality of supply outputs of the fuse modules provide power to the plurality of loads [again standard practice to supply multiple loads from a fuse module/ block].

At the time of the invention it would have been obvious to one of ordinary skill in the art to add a fuse module with supply outputs to Ng.

The suggestion/ motivation for doing so would have been to provide a means of overload protection for the integrated module, as well as the loads supplied by the integrated module. This is common practice for all valuable vehicle loads.

10. With respect to claim 6, Ng further does not disclose a switch within the fuse module that enables connection and disconnection between one of a plurality of fuses and an associated load.

McRoberts discloses a vehicle electrical system comprising: a switch provided within the fuse module [Fig. 1 switches 66, 68, and 70 shown in the vicinity of fuse module 64], wherein the switch enables selective connection and disconnection between at least one of the plurality of fuses and an associated load [switches 66, 68 and 70 connects/ disconnects loads 52 and 53 from fuse block 64]. McRoberts differs

from claimed invention in that switch elements 66, 68 and 70 are not specified as integrated into the fuse module.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the switches 66, 68, and 70 with the fuse block into one integrated module to create an arrangement that is both fused and switched [and capable of easy, simultaneous replacement] with at least one supply output for supplying power to the loads; since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 [CCPA 1965]. See **MPEP 2144.04**.

At the time of the invention it would have been obvious to one of ordinary skill in the art to add a switched fuse module with supply outputs to Ng.

The suggestion/ motivation for doing so would have been to provide a means of switching the fuse module right at its own location. This would be advantageous as a means of convenience to the user, as fuses often melt at the moment the load is switched on.

11. With respect to claim 7, Ng discloses the vehicle electrical system as recited in Claim 1. However, Ng does not disclose a plurality of fuses from the integrated module that connects the supply outputs to the battery.

McRoberts discloses a vehicle electrical system comprising: a plurality of fuses [Fig. 1 fuse block 64]; wherein the integrated module has a plurality of supply outputs, and wherein the plurality of fuses connect the plurality of supply outputs to the battery

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[Fig. 1, outputs from 66, 68, and 70 with connection to battery 18], whereby power is provided via the plurality of supply outputs to the plurality of loads [Fig. 1, instrument lights 52 and compartment lights 53].

At the time of the invention it would have been obvious to one of ordinary skill in the art to add a plurality of fuses connecting a plurality of supply outputs to Ng.

The suggestion/ motivation for doing so would have been to provide a means of overload protection for the loads supplied by the battery monitor/ power management integrated module.

12. With respect to claim 8, Ng discloses the vehicle electrical system as recited in Claim 7. Ng also discloses a switch provided within the integrated module [Fig. 4 switch 30, shown in the vicinity of the battery voltage monitor and power management unit. One of ordinary skill in the art can easily combine the switch with the battery monitor/ power management unit module see, claim 1 argument, for the purpose of creating a single integrated unit]. However, Ng does not disclose a switch within the integrated module, wherein the switch enables selective connection and disconnection between at least one of the plurality of fuses and an associated load.

McRoberts discloses a vehicle electrical system comprising: a switch, wherein the switch enables selective connection and disconnection between at least one of the plurality of fuses and an associated load [McRoberts: switches 66, 68 and 70 connects/ disconnects loads 52 and 53 from fuse block 64].

At the time of the invention it would have been obvious to one of ordinary skill in the art to add McRoberts' switch that enables selective connection and disconnection between at least one of the plurality of fuses and an associated load, to Ng.

The suggestion/ motivation for doing so would have been to provide a means of switched overload protection for the loads supplied by the battery monitor/ power management integrated module. Placing the switch near the fuses would be a matter of convenience to the user, as fuses often melt at the moment the load is switched on.

13. Claim 9 is rejected under 35 U.S.C. 103[a] as being unpatentable over Ng et al [US 6320351] in view of Perhats [US 6116513].

14. With respect to claim 9, Ng discloses the vehicle electrical system as recited in Claim 1, wherein the integrated module has a terminal for connection to a generator [Fig. 7 element 16 shows a generator connected to the battery monitor/ power management module via contact 30A and input 50A], and wherein one of the battery master switch and the fuse is situated between the battery and the terminal of the integrated module [Ng Fig. 7 shows connection of the battery monitor/ power management module to the battery positive terminal through connections 50A and contact 30A]. However, Ng does not disclose a battery master switch and a fuse.

Perhats [US-6116513] discloses a vehicle electrical system comprising: one of a battery master switch and a fuse [Fig. 5 element 74 shows an auto reset breaker that is inherently both a fuse and switch and can be considered a master switch because of its direct connection to the battery]. Perhats [Fig. 5] also shows circuit breaker 74 between the battery and SPST relay 86. I.e. Perhats' circuit [Fig. 5, from battery 12 to SPST 88]

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can clearly be used to replace Ng's circuit [Fig. 7], from battery 12A to latching relay 30A, for the purpose of integrating Perhats' circuit breaker into Ng's integrated module.

At the time of the invention it would have been obvious to one of ordinary skill in the art to add a battery master switch and a fuse [protective circuit breaker], to Ng.

The suggestion/ motivation for doing so would have been to provide a means of switched overload protection for the loads supplied by the battery monitor/ power management integrated module. As is well known in the art, using a battery master switch also has the advantage of completely isolating the loads from the source, which would prevent unnecessary drainage of the battery.

15. Claims 11 and 12 are rejected under 35 U.S.C. 103[a] as being unpatentable over Ng et al [US 6320351] in view of Kelwaski [2003/0107863].

16. With respect to claims 11 and 12, Ng discloses the vehicle electrical system as recited in Claim 1. Ng does not disclose a communications interface for the integrated module, or that the communications interface is a bus interface.

Kelwaski [2003/0107863] discloses a vehicle electrical system comprising: a communications interface [Fig. 5 CAN controllers 63 and 64 are connected by 18 J1939 Drive Train data link; a known communications bus interface] for the integrated module; wherein the control unit for power management is in contact with at least one of the plurality of loads of the vehicle electrical system and an additional control unit of the vehicle via the communications interface for the integrated module [page 3 paragraph [0029] lines 4-10; and Fig. 4 elements 18, 24, and 37].

At the time of the invention it would have been obvious to one of ordinary skill in the art to add a configurable interrupter for circuit overcurrent communications bus interface to Ng.

The suggestion/ motivation for doing so would have been to increase the speed, bandwidth, and efficiency of communication between the power management unit, controllers, and the loads.

17. Claim 13 is rejected under 35 U.S.C. 103[a] as being unpatentable over Perhats [US-6116513] as applied to claim 9 above, and further in view of Larson [US-6690140].

18. With respect to Claim 13, Ng discloses the vehicle electrical system as recited in Claim 1, as well as an electrical generator [Fig. 7 element 16] that recharges battery 12A. Perhats discloses the vehicle electrical system, as recited in Claim 9.

Ng and Perhats do not disclose that the integrated module further includes an electronics unit for at least one of regulation and diagnosis of the generator.

Larson [US-669140] discloses the vehicle electrical system wherein the integrated module further includes an electronics unit for at least one of regulation and diagnosis of the generator [col. 3 lines 43-53 describes how ESC 30, in combination with other controllers, execute a battery management program that regulates and diagnoses the battery/ pack by making adjustments to the generator output. Since the battery is directly connected to the generator, the generator output is also effectively diagnosed.

At the time of the invention it would have been obvious to one of ordinary skill in the art to add a battery master switch and a fuse [protective circuit breaker] to Ng.

The suggestion/ motivation for doing so would have been to provide a means for the vehicle electrical system to regulate and diagnose the battery/ generator, and so increase/ decrease the rate of charging as required. This is a necessary requirement for any type of vehicle that could conceivably impact human safety [such as today's automobiles] or lead to equipment damage [an overcharged battery could result in an explosion].

19. Claims 14 and 15 are rejected under 35 U.S.C. 103[a] as being unpatentable over Ng in view of McRoberts [US 4965461] as applied to claim 5 and claim 7, respectively, and further in view of Kelwaski [2003/0107863].

20. With respect to claim 14, Ng and McRoberts disclose the vehicle electrical system as recited in Claim 1 and Claim 5, respectively. With respect to Claim 15, Ng and McRoberts also disclose the vehicle electrical system as recited in Claim 1 and Claim 7, respectively. Ng and McRoberts do not disclose a detection arrangement for diagnosis of a state of at least one of the fuses.

Kelwaski discloses that the integrated module further includes a detection arrangement for diagnosis of a state of at least one of the fuses [page 3, paragraph [0025], lines 1-6].

At the time of the invention it would have been obvious to one of ordinary skill in the art to add a state-of-fuse detection arrangement to Ng as modified by McRoberts.

The suggestion/ motivation for doing so would have been to enable the electronics unit to absolutely determine whether a de-energized power bus [no battery voltage or power output from the generator] was the result of a defective battery/

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generator, or an open in the line, such as a blown fuse. Thus “fuse-state sensing” would allow the electronics unit [or a technician] to be more effective in diagnosing malfunctions.

21. Claim 16 is rejected under 35 U.S.C. 103[a] as being unpatentable over Ng et al [US 6320351] in view of Baer [US-5701068].

22. With respect to claim 16, Ng discloses the vehicle electrical system as recited in claim 1. Ng does not disclose that the integrated module includes a DC-DC converter.

Baer [US-5701068] discloses a vehicle electrical system wherein the integrated module further includes a DC-DC converter [Fig. 2 DC charger 70 includes a DC-DC converter]. In this case, Baer’s [Fig. 2] equivalent integrated module would consist of DC charger 70 and sensor node 200 [as the battery monitor unit] and CPU 20, as the power management unit, with the DC-DC converter shown integrated into the battery charger.

At the time of the invention it would have been obvious to one of ordinary skill in the art to add a DC-DC converter to Ng.

The suggestion/ motivation for doing so would have been to increase the charging capacity of the generator-battery system, since it is well known that DC-DC converters are capable of multiple [and if needed variable] voltage outputs, with a higher amperage supply capacity than a regular generator. This would be useful for battery management systems on electrical vehicles with large battery packs.

23. With respect to Claim 17 and Claim 18, Ng discloses the vehicle electrical system as recited in Claim 1, as well as a plurality of loads [Fig. 7, loads 20, 22, and

24]. Ng does not disclose an integrated module with at least one circuit breaker that enables selective connection and disconnection of one of a single load and a plurality of loads from the integrated module.

Perhats [US-6116513] discloses a vehicle electrical system wherein the integrated module further includes at least one circuit breaker [Fig. 5 element 74 shows an auto reset breaker]. The circuit breaker further enables selective connection and disconnection of one of a single load and a plurality of loads from the integrated module [see Ng's plurality of loads Fig. 7 loads 20, 22, 24].

It has already been shown that Ng's battery voltage monitor and power management unit can be incorporated into a single module [see Claim 1 above]; using the same means, one of ordinary skill in the art can easily combine Perhats' circuit breaker 74 with Ng's battery voltage monitor/ power management module to produce applicant's Battery State of Charge Detection System, with at least one circuit breaker in the integrated module to enables selective connection and disconnection of one of a single load and a plurality of loads.

The suggestion/ motivation for doing so would have been to produce an integral module capable of battery monitoring/ power management, with onboard protection that offer a convenient means of resetting from overload faults.

Allowable Subject Matter

20. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claim 4 is allowable over the art of record because the prior art does not disclose a battery temperature meter that cooperates with a battery temperature sensor. While the prior art does disclose a battery temperature sensor in the vicinity of a battery [Larson, Fig. 2, element TEMP], there is no mention of a meter, nor is it immediately obvious why one would combine the two. Also, battery temperature is not a typical parameter that is normally monitored on most vehicles' instrument gauges [electrical vehicles being the possible exception], and this is not anticipated or rendered obvious by the prior art of record.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard V. Muralidar whose telephone number is 571-272-8933. The examiner can normally be reached on Monday to Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Gray can be reached on Monday to Friday 8-5. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RVM
12/02/2005

A handwritten signature in black ink, appearing to read 'DAVID M. GRAY', with a long horizontal line extending to the right.

**DAVID M. GRAY
PRIMARY EXAMINER**